



Examining Processes that Enhance Retention of Baccalaureate Nursing Students: A Descriptive Case Study in one American University

By Julius M. Kitutu¹, PhD, MSc. M.Ed. (jmm@pitt.edu), & Khadejah F. Mahmoud², MSN, BSN.

¹Associate Professor, University of Pittsburgh School of Nursing, Pittsburgh, PA, USA. This paper was completed in June 2018 as part of Graduate Student Assistant assignment in the Doctor of Philosophy Nursing program at University of Pittsburgh School of Nursing, Pittsburgh, PA, USA.

²PhD Candidate, University of Pittsburgh School of Nursing, Pittsburgh, PA, USA.

Abstract

Worldwide, the shortage of registered nurses (RNs) presents a serious problem within healthcare systems. The demand for RNs in the United States is expected to increase by 3% annually and it is estimated that the shortage of RNs in 2020 will be 285,000. Retention among nursing students is considered a global challenge. The purpose of this case study was to identify effective strategies used within University of Pittsburgh, School of Nursing to enhance nursing students' retention rates. The study utilized a cross-section of data to present strategies used to enhance freshmen and sophomore nursing students' retention between 2007 and 2016. For this descriptive case study, data were collected from first and second year university nursing students who were in the program between 2007 and 2016. The retention strategies employed at University of Pittsburgh School of Nursing that were identified as most significant were: adopting stringent admission criteria, identifying at-risk students, implementing undergraduate research mentorship program (URMP), having honors program within school, hiring professional advisors, and personalized advising. Over a 9-year period, these strategies have improved retention rates, especially for freshmen students from 78.11 to 98.4%, including identifying at-risk students, and creating good relationships between students, academic advisors and faculty. However, we believe that a large-scale study is needed to evaluate to what extent the salient strategies that were found to be effective in this case study might be applicable to Bachelor of Science in Nursing programs at other University Schools of Nursing.

Keywords: at-risk students; university nursing students; retention strategies; mentorship

Introduction and Background

Nurses are key partners in responding to the increasing demands and challenges of dynamic healthcare systems and to the health of an aging population's health (Cameron, Roxburgh, Taylor, & Lauder, 2011; Shelton, 2012). Worldwide, shortages among registered nurses (RNs) present a serious problem within healthcare systems (Shelton, 2012). In the United States, demands for RNs are expected to increase by 3% annually (Buerhaus, Staiger, & Auerbach, 2009; Shelton, 2012), and it is estimated that the shortage of RNs in 2020 will be 285,000 (Buerhaus et al., 2009). Attrition of nursing students is expensive, and has a negative impact on students, nursing programs and the healthcare communities. According to Prymachuk, Easton, and Littlewood (2009), attrition among nursing students waste the time and effort of educators and the students themselves.

Retention is defined as “when students remain in one higher education institute and successfully complete their program of study within a specific time period” (Boath et al., 2016, p.80). Retention among nursing students is considered a global challenge (Last & Fulbrook, 2003). In the US, there are four paths to becoming a registered nurse (RN): four-year programs, associate degree from a community college, college diploma, and accelerated second degree programs.

In the United States, 42% of enrolled students in a nursing associate degree left school in 2010 (Fraher, Belsky, Gaul, & Carpenter, 2010; Rodgers, Stenhouse, McCreddie, & Small, 2013). Nationwide, the attrition rate among nursing programs is approximately 50% (Newton & Moore, 2009). High attrition rates among nursing students were also reported in the United Kingdom (25-30%), Scotland (24.8%) and other developing countries (Rodgers et al., 2013). In addition, nurses' high attrition rates influence the nursing schools' ability to supply hospitals with nurses on a local and national level further contributing to the current nursing shortage and its impact on achieving effective healthcare delivery systems (Buchan & Aiken, 2008; Jeffreys, 2007). As a result, the highest priority of nursing programs has been to devise strategies to maximize student retention (Jeffreys, 2007). Nursing educators are in an ideal position to promote nursing retention and enhance students' educational outcome (Jeffreys, 2007).

Various studies have identified strategies used to enhance retention of nursing students. These include: selecting potential successful nursing student candidates through targeting requirement and admission criteria, identifying at-risk students, preparing skilled students for entering the nursing workforce, developing strategies to facilitate students' success, and expanding research in education (Cuthbertson, Lauder, Steele, Cleary, & Bradshaw, 2004; Dixon, Webb, & Malfroy, 2001; Fleming & McKee, 2005; Jeffreys, 2007; Shelton, 2012). Hence, exploring successful retention strategies within nursing programs is imperative to reduce

nursing shortages. The purpose of this paper is to examine five main strategies used within the University of Pittsburgh School of Nursing to enhance nursing students' retention rates between 2007 and 2016.

Methodology

Data were retrieved from the university student data warehouse and also from the school of nursing developed database system. Applicants to the nursing program are centrally reviewed and admitted by the University Admissions office following the admission criteria provided by the respective schools. Each school examines the admission criteria on a regular basis in order to inform changes in their school's admission criteria for the coming years. The retention and identification of the at-risk student data were retrieved from the school database system used to monitor students' academic progress throughout the program.

Retention Strategies Employed

The main retention strategies employed within the school of nursing include the following: adopting stringent admission criteria, identifying at-risk students, implementing an undergraduate research mentorship program (URMP), having an in-school honors program, hiring professional advisors and personalized advising.

Admission Criteria

One of the successful strategies used to enhance students' retention within nursing programs is selectivity of applicants deemed to be successful in the program using predetermined admission criteria within schools of nursing. According to Rodgers et al. (2013), selecting the right candidates results in higher rates of success and retention within nursing programs. However, there is limited research evidence on which to base the recruitment and admission criteria. Previous attempts to determine the key selection criteria consisted of assessing psychomotor, observational, interpersonal and motivational skills (Price, 2000; Rodgers et al., 2013). These criteria may not be sufficient to predict success and retention within schools. In addition to these criteria, some programs used interviews to determine students' retention and success in the program (Rodgers et al., 2013). However, according to Donaldson, McCallum, and Lafferty (2010), scoring candidate interviews was described as a subjective process. Hence, the authors stated that it was not a reliable predictor of first year college students' success.

Despite the many attempts to identify the selection criteria that best predict nursing students' retention and success, the only reliable predictor of success in health professional schools was students' Grade Point Average (GPA) or admission academic grades (Andrew et al.,

2008; Last & Fulbrook, 2003; Lysaght, Donnelly, & Villeneuve, 2009; McCarey, Barr, & Rattray, 2007; Rodgers et al., 2013). A meta-analysis conducted in the United States by Grossbach and Kuncel (2011) indicated that standardized admissions tests, SAT (Scholastic Aptitude Test) and ACT (American College Test) were effective predictors of students' performance on the National Council Licensure Examination for Registered Nurses (NCLEX-RN).

In the United States, the SAT reasoning test is a standardized admission test that is widely used for university admissions and is found to predict freshmen GPA (Hezlett et al. 2001; Kobrin & Michel, 2006). In addition to SAT, a study by Shulruf, Wang, Zhao and Baker (2011) found that students' high school GPA and admission ranking scores were the best predictors of their academic achievement in first year in nursing school. In fact, Camara and Kimmel (2005) stated that using SAT scores in combination with high school GPA is a stronger predictor of first-year GPA compared to using either separately. Both SAT and high school GPA measure slightly different aspects of students' college achievement. SAT measures students' academic performance and reasoning ability. In addition to measuring academic achievement, high school GPA measures non-cognitive aspects such as attendance and effort (Stiggins, Frisbie, & Griswold, 1989). According to Kobrin and Michel (2006), SAT was a better predictor of successful students, while high school GPA was a better predictor of unsuccessful students. For students attending selective universities, SAT was equally or more effective at predicting success in first-year GPA (Kobrin & Michel, 2006). On the other hand, high school GPA was a better predictor of success for students attending less selective universities (Kobrin & Michel, 2006). Selectivity is measured by the percentage of students admitted to the total applicants. Lower percentage indicates high selectivity in that institution. In the past eight years, the University of Pittsburgh School of Nursing selectivity ranged from 23.8 to 29.1% (See Table 1).

Table 1: Selectivity in the University of Pittsburgh School of Nursing Program

Academic Year	Total Applicants	Total Offered Admission	Percent of Admitted to Total Applicants (Selectivity)
2007-2008	864	219	25.3
2009-2010	969	282	29.1
2011-2012	1024	290	28.3
2013-2014	1403	354	25.2
2015-2016	1743	415	23.8

The SAT exam consists of three sections: Math, verbal and written sections. However, the university's admission office considers the written portion to be more subjective and less

reliable and hence the written portion is not as widely used to examine applicants' potential for success in college. Thus, the University of Pittsburgh School of Nursing utilized two objective selection criteria for recruiting potential candidates: Standardized admission tests (SAT) and high school GPA. Even though the writing portion of the SAT was presented by the high school applicants, the school only considered students with a score of 600 and above for math and verbal sections (See Table 2).

Sadler (2003) examined nursing admission essays as a potential predictor of students' retention. Students who expressed an internalized role of nursing (e.g. personalize nursing and nursing role vs. those who identify nurses' characteristics but lack personal connections) tended to complete the program compared to students who viewed nursing as external to themselves. As a result, the author stated that students' admission essays that reflected an internalized reason for choosing nursing and previous personal experience and connection with nurses were a strong predictor of them completing the nursing program compared to those who expressed externalized role of nursing.

Over the years, the University of Pittsburgh School of Nursing selection SAT and GPA admission scores have consistently been changed based on the data from previous years (data-driven) to ensure that only the best applicants, having a higher probability of succeeding in the program, are admitted to the school (See Table 2). This practice was associated with higher retention (See Table 3). Admission criteria are based on a combination of SAT scores, GPA scores and on some occasions, the students' class rankings (e.g. top 5th percentile in the class). Not all high schools have class ranks. Higher average SAT and high school GPA scores result in lower attrition rates as observed in freshmen and sophomore students' attrition rates (See Table 2 and Table 3). For example, the admission GPA increased from 3.5 in 2007 to 3.75 in 2011, and the subsequent years. This change in admission GPA contributed to a 4.15% and 4.55 % decrease in attrition rates among freshmen and sophomore students respectively within the following two years among other factors discussed in the paper.

Identifying At-Risk Students

One of the main approaches used to enhance nursing students' retention while in the program is identifying at-risk students. According to Walker et al. (2011), students are identified as at-risk if they meet three or more of the following criteria: unsatisfactory grades in admission tests on reading comprehension and mathematics scores, poor composite nursing entrance examination scores, low anatomy and physiology scores, and/or need for emotional support. However, Walker et al. (2011) also mentioned that at-risk students can also be identified if they have an unsatisfactory grade for reading comprehension and one other variable (e.g. one of the variables described above). Thus, nursing faculty and advisors are tasked with identifying at-risk

students using their science course at freshmen year combined with GPA, and thereafter midterm grades as well as end of term grades (Walker et al., 2011). Nursing programs have developed a number of interventions to facilitate at-risk students' retention utilizing faculty and peer mentors, study groups, and extra help in classes. However, according to Walker et al. (2011), these programs could not identify the most effective approach.

Table 2: University of Pittsburgh School of Nursing Admission Criteria and Freshmen Attrition Rates

Academic Year	GPA	Average SAT	Total enrolled	Attrition Rates (%)
2007-2008	3.30	1234	137	21.89
2009-2010	3.50	1246	172	5.23
2011-2012	3.75	1301	166	7.23
2013-2014	3.75	1311	162	3.08
2015-2016	3.75	1328	125	1.60

Note. GPA= Grade Point Average; SAT: Standardized Admission Tests; ACT: American College Test

Table 3: University of Pittsburgh School of Nursing Sophomore Attrition Rates

Academic Year	Total	Dropout	Sophomore Attrition Rate (%)
2007-2008	114	5	4.39
2009-2010	161	14	8.70
2011-2012	141	13	9.22
2013-2014	150	7	4.67
2015-2016	112	5	4.46

For the purpose of this study, at-risk student was defined as a general term that covers both poor academic standing and any other behaviors that affect the student's progression in college. At the University of Pittsburgh School of Nursing, faculty members and the professional student advisors work together in making sure that students' progress academically. Advisors receive reports from the faculty members on students who do not do well in class. At-risk students are identified by the class instructor if they meet one of the following criteria: (1) failing to attend class; (2) not performing well in class (such as failing in quizzes and exams), as reflected in midterm grades; (3) not submitting class assignments in time; and (4) exhibiting inappropriate behavior (e.g. not cooperating on group assignments, not fulfilling clinical

expectations, or portraying impaired clinical performance which reflects any behavior that indicates unsafe clinical performance that may pose harm to themselves or others). If the student meets one of the above criteria, academic advisors are informed.

The majority of at-risk students are often identified at the mid-term exams when they receive an unsatisfactory grade (U). This information is shared with the academic advisor by the teaching faculty. Once the academic advisor is notified, regular meeting schedules are arranged with the student to discuss time management and studying strategies. For first year students, the academic advisor will schedule a weekly meeting with the at-risk student until the end of term. Meanwhile, students at other academic levels (e.g. sophomore, junior and senior levels) meet intermittently with the academic advisor and receive regular follow-up emails to ask them how they are doing. In addition, the assigned academic advisor consults with the faculty to lay down strategies and methods to help the students succeed. In addition, the advisor follows up with the faculty about the at-risk students' academic performance. Academic advisors also may refer these students to a peer tutor (upper classmen who have excelled in the courses they teach paid by the school) or Academic Resource Center (ARC) or counseling center, if needed. At the end of the term, students who still receive an unsatisfactory grade are contacted and asked to meet with their respective academic advisor. Students and their advisor put forth a remediation plan, which may result in course repeat, tutoring, and referral to other academic resources in the University. In addition, the advisor reviews the curriculum plan with the student to track the student's progress in the program.

Undergraduate Research Mentorship Program (URMP)

The undergraduate research mentorship program (URMP) was established at the University of Pittsburgh School of Nursing in 2008-2009. The overall purpose of the URMP is "to expose a large proportion of nursing students to the research experience without the stress associated with earning grades and maintaining a high GPA" (Kitutu, McCall, Findle, Mahmoud, & Greene, 2016, p. 68). Specifically, the URMP program aims to (1) engage baccalaureate students in research early in their educational program, (2) improve students' academic performance, (3) foster an appreciation of the nursing research conducted in the school, (4) develop a potential lifelong relationship with the faculty mentor, (5) enhance the retention rates within the school, (6) encourage students to consider graduate education through a hands-on understanding of research, and (7) instill leadership skills in student mentees (Kitutu et al., 2016).

Upon admission to the School of Nursing, all undergraduate students are eligible to join the URMP program. However, in order for students to remain in the program, they must be full-time students, maintain a grade point average (GPA) of at least 3.0 and commit to work for 5

hours per week (Kitutu et al., 2016). To avoid ethical issues, all students have to complete a number of training modules before they start; these include the HIPAA research module and Collaborative Institutional Training Institute (CITI) modules for basic biomedical research, responsible conduct of biomedical research, and conflict of interest (COI) (Kitutu et al., 2016).

According to Kitutu et al. (2016), the URMP research experience helped students embrace the research process at the School of Nursing through preparing Institutional Research Board applications, writing abstracts and proposals, and presenting at conferences. In addition to encouraging students to participate in research, URMP program mentors played a major role at helping at-risk students remain in program (Kitutu et al., 2016). URMP mentors helped keep students on track, facilitated effective time management, provided them with various opportunities to learn the research process and gain personal growth.

Nursing School Honors Program

According to Digby (2005), an honors program is defined as “a sequence of courses designed specifically to encourage independent and creative learning” (p. 9). In 2014, the University of Pittsburgh School of Nursing established the honors program. The purpose of the honors program is to “meet the needs of outstanding baccalaureate students and to help develop future leaders in the nursing profession” (Mahmoud et al., 2017, p. 1).

For students to be eligible to participate in the honors program they have to meet the following criteria: (1) receive a minimum SAT score of 1400 in high school; (2) maintain a minimum GPA of 3.5 for the entire time of the program; and (3) develop a research project (Mahmoud et al., 2017). Student not qualified to enter honors program at admission can still be eligible to participate in honors classes if they obtain a college GPA of 3.25. However, they are not allowed to write their honors thesis unless their GPA is 3.5.

The main objectives of the School of Nursing (SoN) honors program are to (1) attract, maintain and provide support to this selected group of undergraduate nursing students; (2) promote students' research experience through the completion of a research thesis; (3) and encourage early advances in future careers or graduate-level education through providing networking, presentation, and publication opportunities, all of which set these student scholars apart from other undergraduate nursing students and ensure their success (Mahmoud et al., 2017; The University of Pittsburgh School of Nursing, 2018). Thus, honors programs in nursing may help retain exceptional students by recognizing their outstanding academic performance promoting these students' research experience through developing a research thesis and distinguishing them from other nursing students (Mahmoud et al., 2017).

Hiring Professional Advisors and Personalized Advising

In the University of Pittsburgh School of Nursing, all undergraduate students are assigned an academic professional advisor throughout their program. The students are expected to meet with their designated academic advisor at least twice a term to discuss academic progression and class scheduling. The advising team is a part of the school's Student Services and Alumni Relations office and also a member-of the National Academic Advising Association (NACADA). Before starting, all academic advisors are expected to complete the advising modules as well as attend a local conference. In addition, students are asked to complete a questionnaire in their first-year seminar class regarding their specific interests in nursing and beyond. This information helps the advisors to provide personalized advising regarding their students' education as well as facilitate discussion regarding the student's career path from the first meeting, while exploring the student's vision after graduation and areas that they can be involved in while in the school. Thus, this approach provides students with personalized advising that matches their academic progression with their future career goals.

Conclusion

The University of Pittsburgh School of Nursing has found a range of strategies as described in this paper to be productive at reducing freshmen and sophomore students' attrition rates. The approaches include: adopting stringent admission criteria, identifying and supporting at-risk students, implementing an URMP, having an honors program within school, hiring professional advisors and personalized advising. Over the years, these strategies have improved retention rates, retained at-risk students and created good relationships between students, academic advisors and faculty. It is important to note that the strategies described in this paper are not exhaustive and other factors that influence students' retention should be considered such as personal factors, financial factors and health factors. None-the-less, the success associated with the strategies may make them useful to other schools of nursing that are concerned with high attrition rates.

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